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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/827,389	04/19/2004	Chung-Cheng Chou	N1085-00209	3133

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EXAMINER	
PHAM, LONG	
ART UNIT	**PAPER NUMBER**
2814	

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/827,389	CHOU, CHUNG-CHENG	
	Examiner	Art Unit	
	Long Pham	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1,2 and 4-15 is/are pending in the application.

4a) Of the above claim(s) 8 and 13 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1,2,4-7,9-12,14 and 15 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date IDS.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Prior Art Disclosure

The applicant is requested to submit the source or reference of prior art as disclosed in the Field of Invention and fig. 1.

Election/Restrictions

Applicant's election without traverse of claims 1-2, 4-7, 9-12, 14, and 15 in the reply filed on 12/12/05 is acknowledged.

Election/Restrictions

Claim Rejections - 35 USC § 112

Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 6, it is unclear what "OD" is referred to. The specification provides no explanation of "OD".

In claim 6, it is unclear where the substrate insulator is formed so reference by the step height to the substrate insulator is indefinite.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2, 4-7, 9-12, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted prior art (AAPA) of this application in combination with Afgabi et al. (US publication 2003/0095427).

With respect to claims 1, 2, 7, 12, AAPA teaches a single transistor random access memory cell, comprising (see fig. 1 and the Field of the Invention):

A transfer gate 120; and

A storage capacitor with a storage node 150.

AAPA fails to teach that the storage node has an MOS native device.

Afgabi et al. teach a storage node having an MOS native device to reduce the charge leakage. See [0004] and [0005].

It would have been obvious to one of ordinary skill in the art of making semiconductor devices to incorporate the above teaching of Afbabi et al. into the device of AAPA to achieve the above benefit.

Further with respect to claims 1, 2, 7, and 12, since AAPA in combination with AAPA teach the claimed structure, an inversion layer having a near zero threshold voltage would inherently be formed under beneath the transfer gate.

Further with respect to claims 1, 2, 7, and 12, how the inversion layer is formed has not been given patentable weight since claims are directed to a device.

With respect to claims 4, 9, and 14, AAPA further teaches that the transfer gate 120 and a capacitor plate 130 is being closer together than a minimum line width of a layer.

With respect to claims 5, 10, and 15, AAPA further teach a air spacer between the transfer 120 and capacitor plate 130 but fails to tech the spacer is made of dielectric.

However, the use of dielectric as insulating spacer or spacing is well-known.

With respect to claims 6 and 11, AAPA further teaches that the capacitor plate 130 covering the STI insulator and sidewall of the trench of STI.

Further with respect to claims 6 and 11, AAPA further teaches a shallow trench isolation, STI, insulator 110 having a step height below that of a sidewall of an insulator between the capacitor plate and substrate. See fig. 1 and associated text of this application.

Further with respect to claim 11, AAPA further teaches the transfer gate 120 and the capacitor are being in an active area of the substrate. See fig. 1 and associated text of this application.

Further with respect to claim 11, AAPA fails to teach an external MOS native device.

Afgabi et al. teach including an MOS native device to reduce the charge leakage. See [0004] and [0005].

It would have been obvious to one of ordinary skill in the art of making semiconductor devices to include an MOS native device in the device of Afbabi et al. to achieve the above benefit.

Further with respect to claim 11, AAPA in combination with Afgabi et al. further teach that the capacitor plate covering the STI insulator 110 and plate would inherently cover the MOS native device if incorporated into the device of AAPA.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Long Pham whose telephone number is 571-272-1714. The examiner can normally be reached on Mon-Frid, 10am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Long Pham
Primary Examiner
Art Unit 2814

LP